

Watch dolphins line up to self-medicate skin ailments at coral 'clinics'

19 May 2022



A dolphin with a fungal infection on its dorsal fin. Credit: Angela Ziltener

If a human comes down with a rash, they might go to the doctor and come away with some ointment to put on it. Indo-Pacific bottlenose dolphins get skin conditions, too, but they come about their medication by queuing up nose-to-tail to rub themselves against corals. In the journal *iScience* on May 19, researchers show that these corals have medicinal properties, suggesting that the dolphins are using the marine invertebrates to medicate skin conditions.

Thirteen years ago, co-lead author Angela Ziltener, a wildlife biologist at the University of Zurich, Switzerland, first observed dolphins rubbing against coral in the Northern Red Sea, off the coast of Egypt. She and her team noticed that the dolphins were selective about which corals they rubbed against, and they wanted to understand why. "I hadn't seen this coral rubbing behavior described before, and it was clear that the dolphins knew exactly which coral they wanted to use," says Ziltener. "I thought, 'There must be a reason.'"

Most dolphin research is conducted from the surface of the water, but because Ziltener is a diver, she was able to study the dolphins up close.

It took some time to earn the trust of the pod, which she was able to do in part because these dolphins weren't phased by the large bubbles released by the diving tanks and habituated towards divers. "Some dolphins, like spinner dolphins in the Southern Egyptian Red Sea, are shyer regarding bubbles," she says.

Once the pod allowed her to visit them regularly, she and her colleagues were able to identify and sample the corals that the dolphins were rubbing on. Ziltener and her team found that by repeatedly rubbing against the corals, Indo-Pacific bottlenose dolphins were agitating the tiny polyps that make up the coral community, and these invertebrates were releasing mucus. In order to understand what properties the mucus contained, the team collected samples of the coral.

When lead author Gertrud Morlock, an analytical chemist and food scientist at Justus Liebig University Giessen in Germany, and her team used planar separations combined with on-surface assays and [high-resolution mass spectrometry](#) to analyze samples of the gorgonian coral *Rumphella aggregata*, the leather coral *Sarcophyton sp.*, and the sponge *Ircinia sp.*, they found 17 active metabolites with antibacterial, antioxidative, hormonal, and toxic activities.

This discovery of these bioactive compounds led the team to believe that the mucus of the corals and sponges is serving to regulate the dolphin skin's microbiome and treat infections. "Repeated rubbing allows the active metabolites to come into contact with the skin of the dolphins," says Morlock. "These metabolites could help them achieve skin homeostasis and be useful for prophylaxis or auxiliary treatment against microbial infections."

The reefs where these corals are found are important places for the local dolphin populations. They head there to rest and to have fun. "Many people don't realize that these [coral reefs](#) are

bedrooms for the dolphins, and playgrounds as well," says Ziltener. In between naps, the dolphins often wake to perform the coral rubbing behavior. "It's almost like they are showering, cleaning themselves before they go to sleep or get up for the day," she says.

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A dolphin mother teaches her calf to rub against medicinal coral. Credit: Angela Ziltener

Since she began researching dolphins in Egypt in 2009, Ziltener has noticed a disturbing trend. "The [tourism industry](#) makes a lot of money now out of dolphin swimming. People are dreaming of swimming with the dolphins, so they are figuring out which reefs they use and disturbing the dolphins if they don't follow the guidelines for how to approach them in a responsible way," she says. She is so concerned that she has started an organization called [Dolphin Watch Alliance](#), a conservation group that educates tour guides, tourists, and the public on how to give tourists experiences that are safe for dolphins, and has lobbied for the reefs to become [protected areas](#).

Ziltener and her team hope that as long as the reefs remain a safe place for the [dolphins](#), they can continue to study [coral](#) rubbing and identify which selected corals and sponges are being used for specific body parts.

More information: Gertrud Morlock, Evidence that Indo-Pacific bottlenose dolphins self-medicate with invertebrates in coral reefs, *iScience* (2022). [DOI: 10.1016/j.isci.2022.104271](https://doi.org/10.1016/j.isci.2022.104271).

APA citation: Watch dolphins line up to self-medicate skin ailments at coral 'clinics' (2022, May 19) retrieved 23 May 2022 from <https://phys.org/news/2022-05-dolphins-line-self-medicate-skin-ailments.html>

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